



ARMY GEOSPATIAL CENTER

Presentation to the AGC and NGA Industry Day

Presented by:
Joshua Delmonico
Chief, Enterprise Support Branch
Systems and Acquisition Support
E: joshua.j.delmonico@usace.army.mil
P: (703) 428-7852
1 December 2016



US Army Corps
of Engineers®





US Army Corps of Engineers
BUILDING STRONG.

INTENT



Provide an overview of the Army Geospatial Center's Systems and Acquisition Support Directorate.



US Army Corps of Engineers
BUILDING STRONG.



Army Challenges

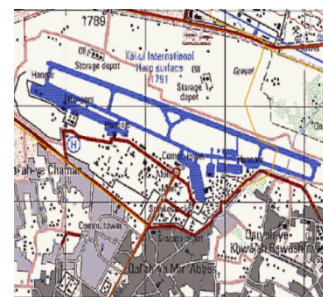
Content
Management
Challenges



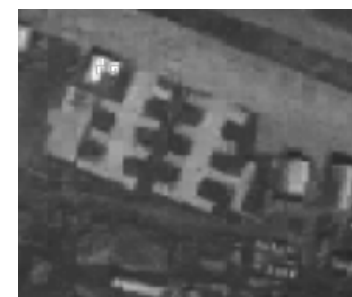
System A



System B



System C



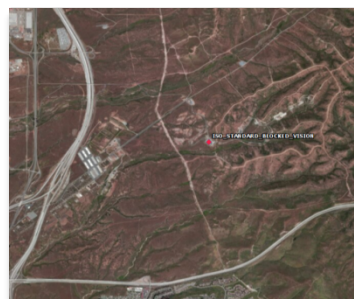
System D



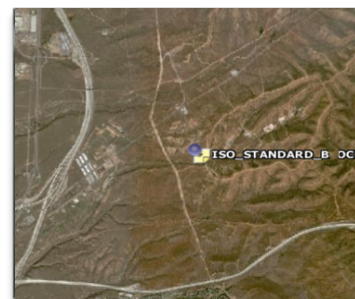
System E

Streamlined Content Management Improves Efficiency and Consistency

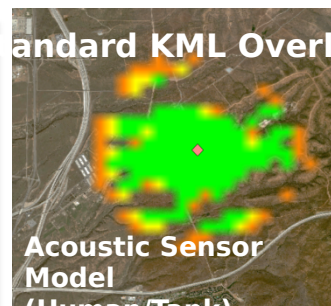
Challenges with
Standards and
Implementation
Profiles



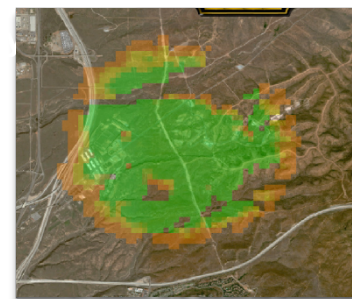
System A



System B



System C



System D



System E

Authoritative Standards and Implementation Guidance Result in Geospatially-enabled Systems That Enable Situational Understanding Through a Consistent COP



US Army Corps of Engineers
BUILDING STRONG.



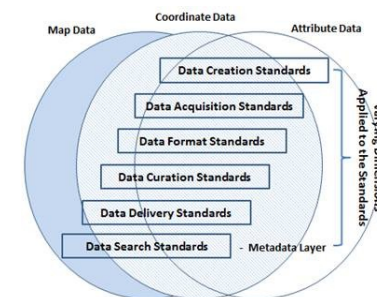
How We Got Here

Requirements

- DCGS-A requirement to provide geospatial foundation is relatively new (Increment 1 Capability Production Document, 2012)
- Mission Command System requirement to pull SSGF from DCGS-A is non-existent
- Inconsistent geospatial requirements across the Army

Standards

- Gaps of Open Standards for GEOINT
- Adoption and implementation of Open Standards evolving
- Lack of Profiles and Implementation Guidance



Testing

- No robust geospatial interoperability testing

Doctrine/Guidance

- No specific regulatory guidance



Training

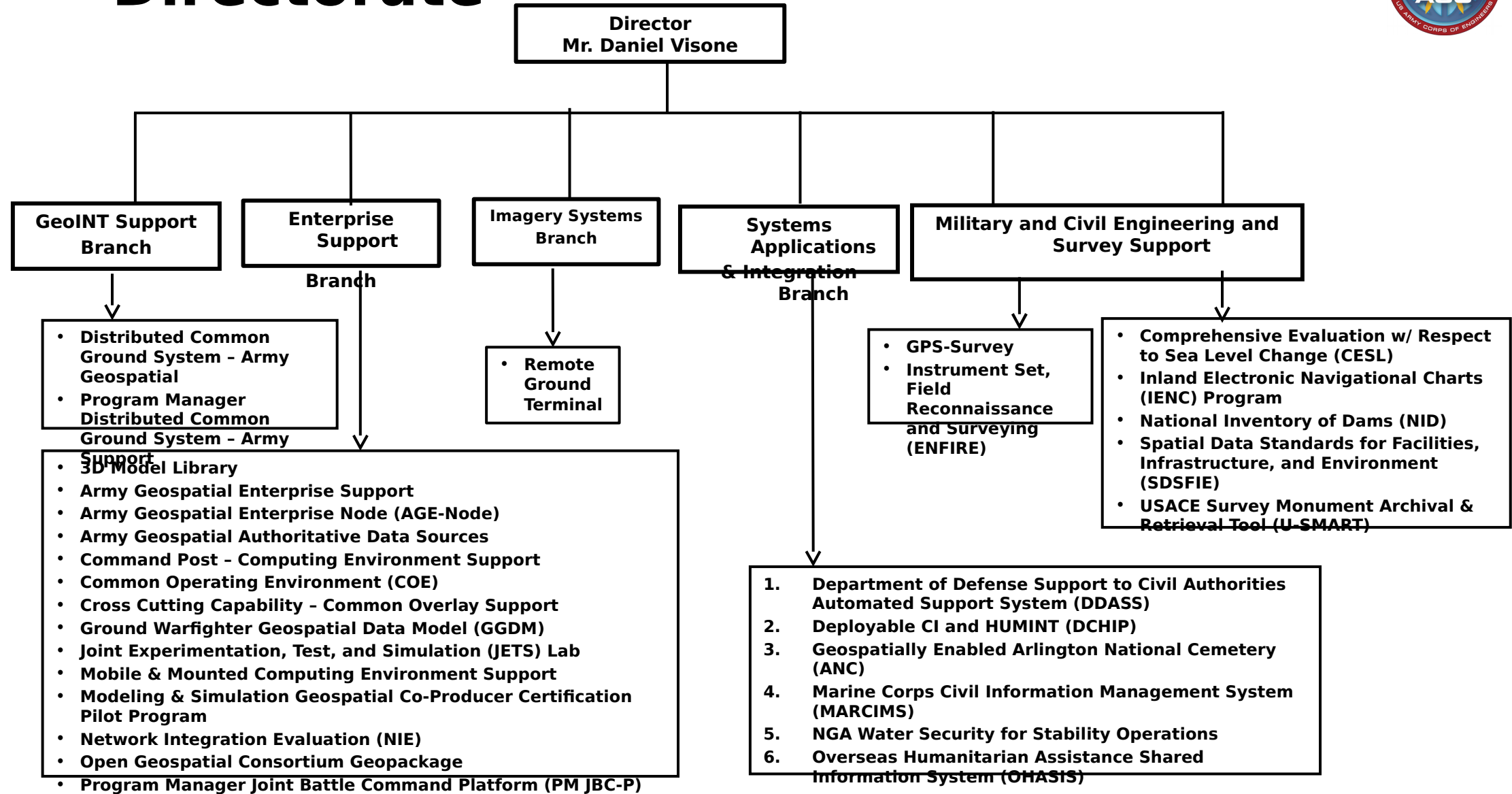
- Lack of Geospatial Training for PMs, PORs, Acquisition Professionals

Army Geospatial is a cross-cutting capability, essential to Army mission command, that needs to be addressed in JCIDS, Resourcing, and Acquisition



US Army Corps of Engineers
BUILDING STRONG.

Systems and Acquisition Support Directorate





US Army Corps of Engineers
BUILDING STRONG.

SYSTEMS AND ACQUISITION SUPPORT DIRECTORATE



Synchronizes Geospatial Enterprise policies, priorities, programs, strategies, and technologies across the Army Acquisition Community; develops, acquires, and fields geospatial and geospatial-intelligence systems and capabilities in support of the Warfighter; and manages technology integration, prototyping, and demonstration programs to ensure the efficient integration of Geospatial Information and Services (GI&S) technologies within the Army Geospatial Enterprise framework.

- Lead for Geospatial Component of Army Common Operating Environment System's Engineering
- Architecture, Data Modeling & Standards Development
- AGE Certification
- Network Integration Evaluation Support
- AGE Node
- Modeling and Simulation

GEOINT SUPPORT

- Distributed Common Ground System - Army
- GEOINT Systems Engineering

IMAGERY SYSTEMS

- Tactical Exploitation of National Capabilities
- Interfaces with National Imagery Intelligence Community
- Remote Ground Terminal (RGT)

SYSTEMS ACQUISITION

- Combat Terrain Information Systems
- Engineer Recon Toolkit - ENFIRE
- Army Integrated Surveying Instrument
- Global Positioning System-Surveying



- Special projects for DoD/Joint/Army/Intel Special Operations and State Department
- Department of Defense Support to Civil Authorities Automated Support System (DDASS)
- Geospatially Enabled Arlington National Cemetery (ANC)
- Marine Corps Civil Information Management System (MARCIMS)
- Command Control of the Information Enterprise (C2IE).
- NGA Water Security for Stability Operations
- Overseas Humanitarian Assistance Shared Information System (OHASIS)



SURVEY ENGINEERING, AND MAPPING TECHNICAL CENTER OF EXPERTISE

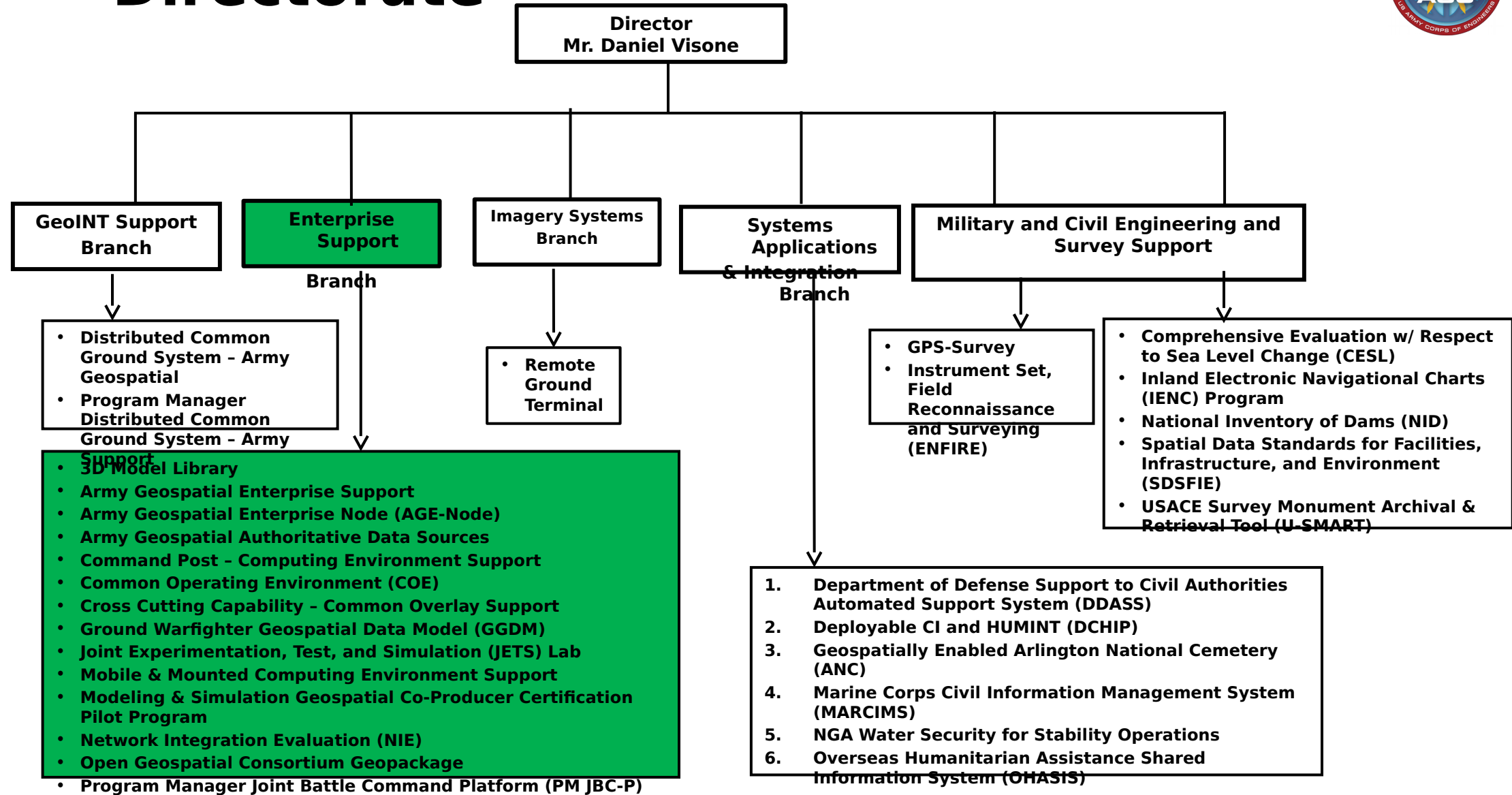
- Comprehensive Evaluation w/ Respect to Sea Level Change (CESL)
- Inland Electronic Navigational Charts (IENC) Program
- National Inventory of Dams (NID)
- Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)
- USACE Survey Monumentation Archival & Retrieval Tool (U-S)

**Synergy: Consistent
Geospatial
Implementations
Across CEs**



US Army Corps of Engineers
BUILDING STRONG.

Systems and Acquisition Support Directorate





US Army Corps of Engineers
BUILDING STRONG.

What is the Common Operating Environment (COE)?



Common Operating Environment (COE) is an approved set of **computing technologies and standards** that enable secure and interoperable applications to be rapidly developed and executed across a variety of Computing Environments (i.e., Data Center/Cloud/GF, Command Post, Mounted, Mobile/Handheld, Sensor, and Real-Time/Safety Critical/Embedded)

Army Acquisition Executive
Directive Memorandum signed
on 20DEC11

- **Codifies the requirement for the AGE (Appendix L)**
- Gives CE leads the authority for detailed planning
- Directs all PEOs to support the CE leads
- Establishes leads for the Platform IPTs
- Provides fidelity of funding data to make corporate re-programming decisions in

support of G 3/5/7 priorities
Mandates the Army to migrate towards interoperability standards, formats, and architecture



Problem Statement

How will the Army manage, update and deliver geospatial data from Headquarters to soldier with a wireless device?

Challenges

- Multiples software packages
- Multiple data formats
- Multiple standards
- Poor network access
- Very long fielding process
- We are not in charge





US Army Corps of Engineers
BUILDING STRONG.

Enabling the Army Geospatial Enterprise



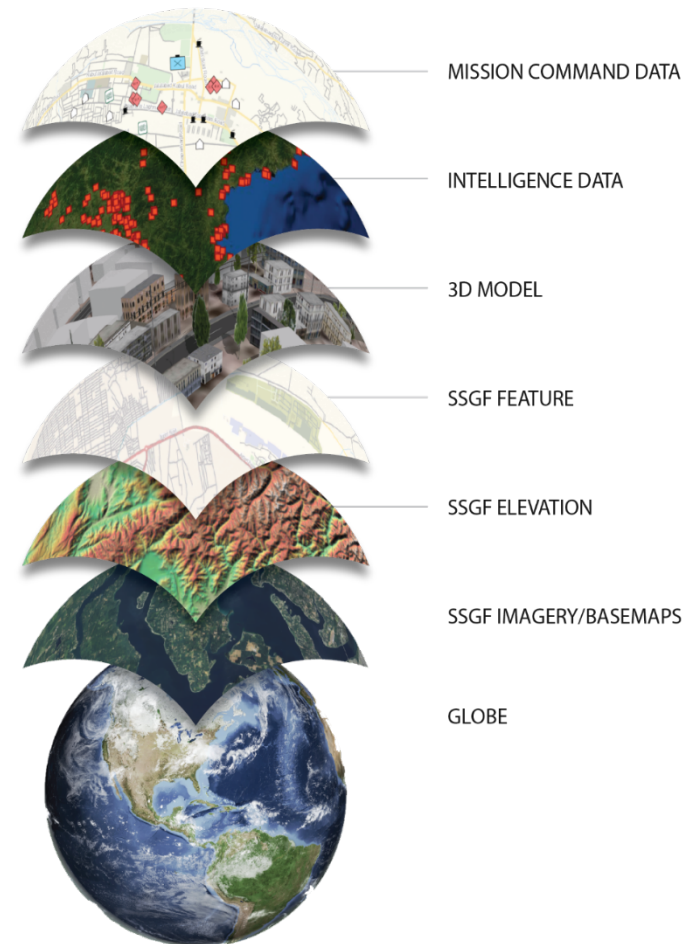
Army Geospatial Enterprise:

An integrated system of technologies, standards, data, organizations and processes that delivers a Standard and Shareable Geospatial Foundation (SSGF) at all echelons.



Geospatial Data

Including SSGF & Other
Georeference Layers



The AGE:

- Eliminates stove pipe systems
- Consolidates geospatial data formats and standards, schema/models, viewers and data management process
- Ensures continuity of operations during Relief in Place/Transfers of Authority (RIP/TOA)
- Ensures the Army has the required geospatial products and training



US Army Corps of Engineers
BUILDING STRONG.

Geospatial Support to ASA(ALT)



AGC provides geospatial domain expertise and acquisition support to the Army Computing Environments (CEs), Program Executive Offices and Product Managers, to implement the AGE compliant with COE guidance within Army acquisition systems.

- Working with Computing Environments(CE) to develop roadmaps to implement guidance
 - DCGS-A a major component
 - Many other systems have requirements to produce or consume
- Coordinating with the NGA to ensure systems that use or produce geospatial information are in compliance with interoperability established by the I
 - DoD Directive 5105.60
- Supporting Cross Cutting Capabilities (CCC) and conducting value engineering trade studies to optimize technology investments
 - Standard Sharable Geospatial Foundation and Common Overlay CCCs
 - 3-D Globes



Core Competencies

- Cross CE/Program of Record (POR) Architectures
- Data modeling & standards development
- Systems Engineering
- Integration Expertise
- Technology assessments & trade studies
- Advise CE leads/PMs on industry trends
- AGE Test and Certification
- Coordinate Army External Geospatial Interfaces

Reimbursable Competencies

- Geospatial implementation support
- Tailored systems engineering
- Tailored experimentation

Mandates the Army to migrate towards interoperability standards, formats and architecture (enabling the AGE)



Building the Army Geospatial Enterprise



AGE ARCHITECTURE

Aligned to and supportive of Army Computing Environments

AGE STANDARDS

Simplify, Specify Open Data Formats/Standards
Maximize use of Web Services to deliver the SSGF

AGE SYSTEMS ENGINEERING

Clear, Authoritative Guidance to Programs
of Record

TEST AND CERTIFICATION

Policy and Process Defined, Aligned with
GFMSA Comprehensive Suite of Test Tools



US Army Corps of Engineers
BUILDING STRONG.

ESTABLISH AND SUSTAIN THE ARMY GEOSPATIAL ENTERPRISE



AGE Architecture

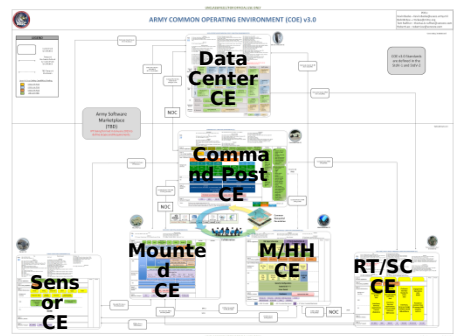
Developed AGE GEOINT Reference Architecture ... *and coordinated results with NGA Community Architecture Working Group (CARWG) to enable Services and data flow from/to NGA/Service-level sources across Army echelons*



Perform functional analysis and comparison of NGA's RTM Program

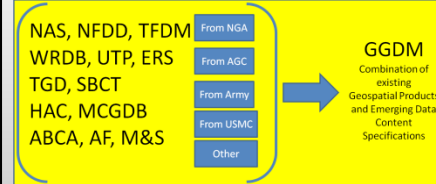


Develop Army COE Reference Architecture



AGE Standards

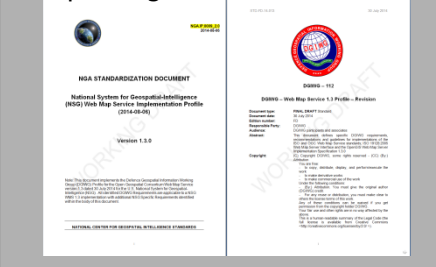
Develop and Configuration Manage NSG Ground-Warfighter Geospatial Data Model (GGDM) under NSG Stds GeoINT Working Group



Developed OGC Geopackage Std in coordination with NGA

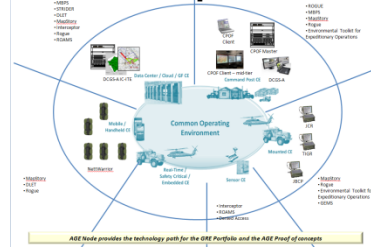


OGC Services - Develop Profiles for NSG/Army implementation e.g., WMS, WFS, WMTS, WCS, KML, Geopackage, OWS Context

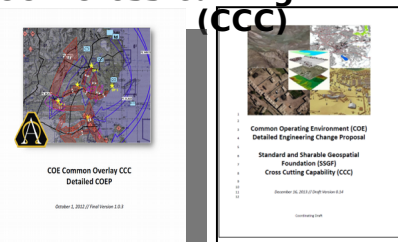


Systems Engineering

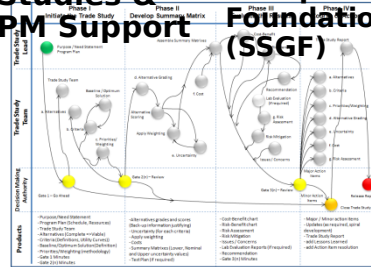
AGE Node Provides the technology path for the R&D Portfolio & AGE proof of concepts



COE Cross-cutting (CCC)



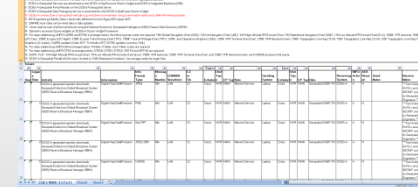
CCC-Common Overlay Trade Studies & PM Support



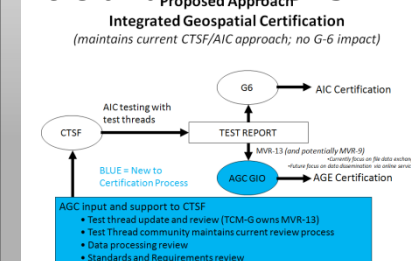
CCC-Standard and Shareable Geospatial Foundation (SSGF)

Test and Certification

Develop/CM GeoINT Test Threads

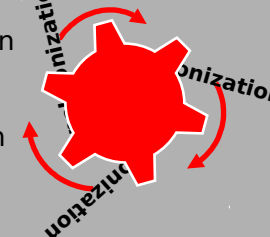


Institute an AGE Certification Process in Alignment with Army T&C and NGA's GFSMA



Network Integration Evaluation (NIE) support

- Content Management
- M&S
- Evaluation Support
- System Integration





US Army Corps of Engineers
BUILDING STRONG.

What is the AGE Node?

A physical instantiation of the AGE within COE at the Army Geospatial Center (AGC), Geospatial Research Laboratory (GRL) and Information Technology Lab (ITL).



Provides simulated Common Operating Environment

- **Data Center CE** (e.g. maps.army.mil prototype)
- **Command Post CE** (e.g. DCGS-A, CPOF, GCCS-A)
- **Mounted CE** (e.g. JCR, JBC-P, TIGR)
- **Mobile Handheld CE** (e.g. Nett Warrior)
- **Sensor CE** (e.g. JSA)
 - **Real-Time Safety Critical CE** (SPIDER)
 - Facilitate ERDC project transitions to Programs of Records (POR's) resident within the Computing Environments (CE's)
 - Experimentation, integration and engineering of R&D efforts to ensure interoperability within the COE

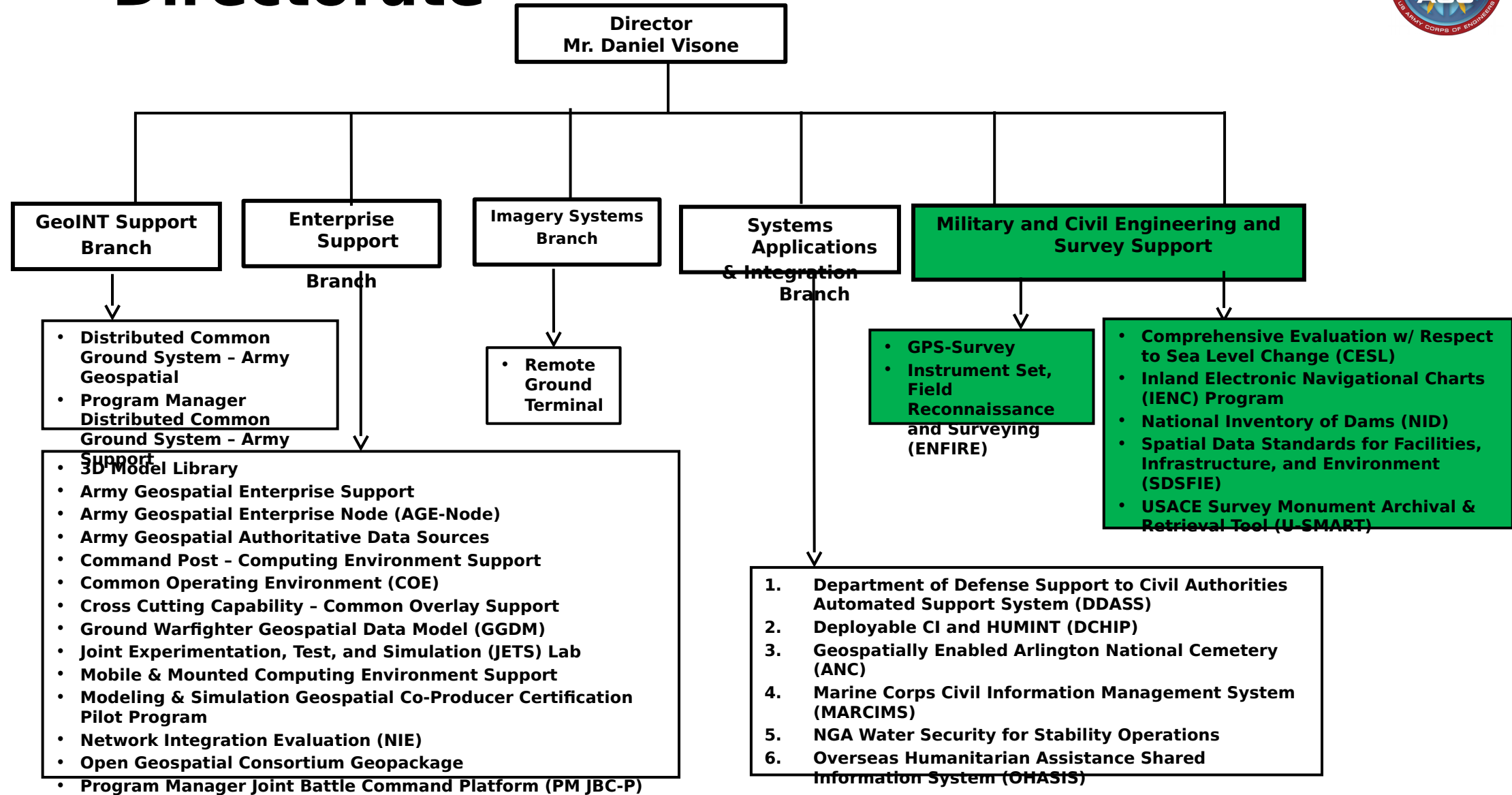


Significant role ensuring relevance of R&D efforts



US Army Corps of Engineers
BUILDING STRONG.

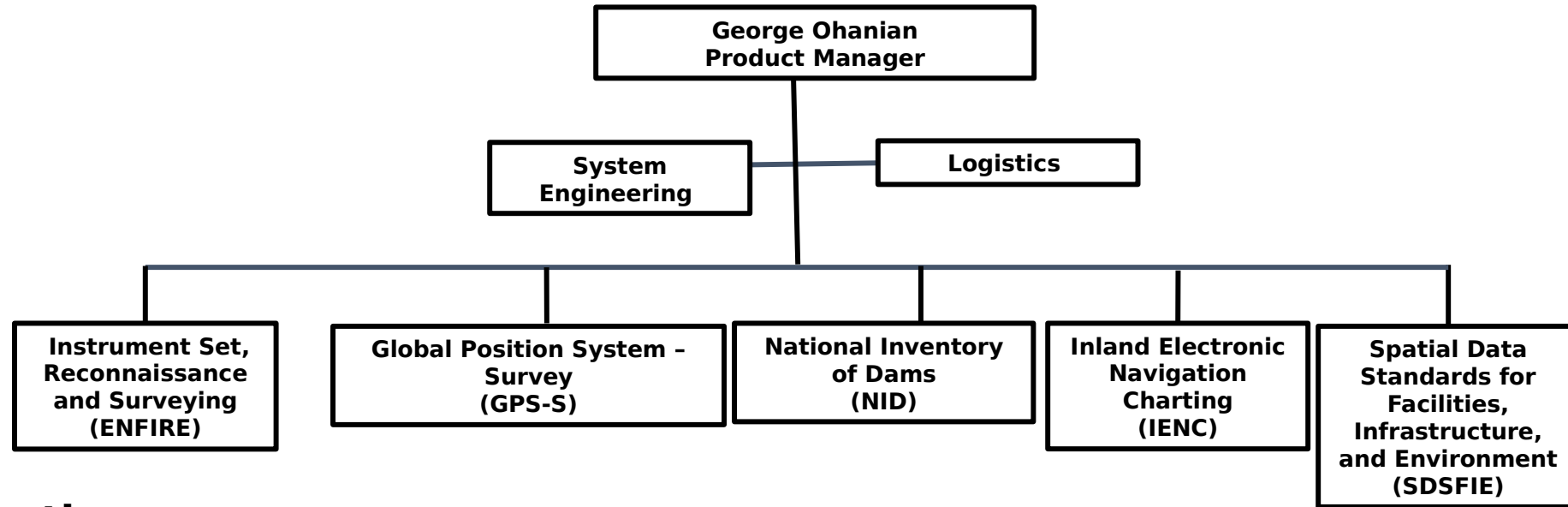
Systems and Acquisition Support Directorate





US Army Corps of Engineers
BUILDING STRONG.

Military and Civil Engineering and Survey Support



Functions

- ☐ Fielding and sustainment support
- ☐ Property Management
- ☐ New Equipment Training
- ☐ Logistics
- ☐ Shipping
- ☐ Documentation development and Management
- ☐ Lifecycle Management
- ☐ Program Management
- ☐ Technical Direction/Guidance
- ☐ Hardware and Software Management
- ☐ Hardware and Software Procurement
- ☐ Software Development
- ☐ Testing and Certification
- ☐ Technical Support
- ☐ Architecture
- ☐ Hardware Configuration
- ☐ Database Development and Management
- ☐ Consulting



Military and Civil Engineering and Survey Support



Mission:

Provide Combat Engineers, Surveyors, Commercial Navigators, Commanders and other decision makers (Federal, DoD, States and Localities) with effective, relevant and agile capabilities, information, tools and training to support operations in any terrain, environment or climate.

Vision:

Enable decisive and rapid, navigation, property management, engineering and construction decisions through real time enterprise enabled hardware agnostic network enabled applications and services that capture and disseminate mission relevant data.



Military and Civil Engineering and Survey Support Products

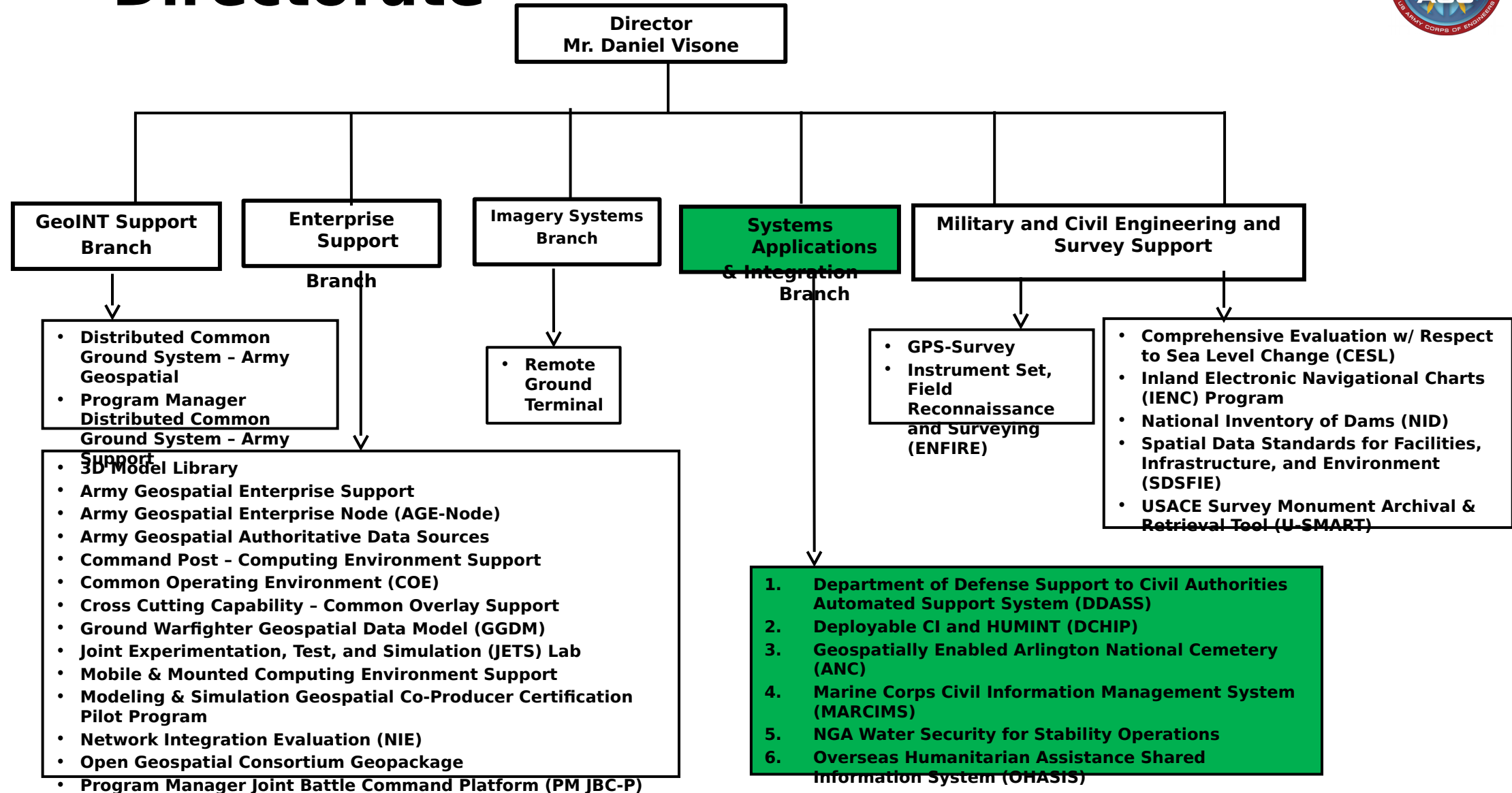


- **ENFIRE** - is a technology upgrade to the analog Survey Set, Military Field Sketching. It is a digital technical engineering tool set, designed to perform reconnaissance, obstacle reporting, construction management, and surveying using stand-off precision measuring devices in conjunction with a tablet computer geographic information system (GIS)
- **GPS-S** - enables Engineer Survey and Design Team members to efficiently perform construction and topographic surveys, in support of the war fighter, with centimeter level precision. GPS-S interfaces with AISI to perform integrated GPS/optical surveys, and with the Instrument Set, Reconnaissance and Surveying (ENFIRE) tablet PC to offload survey data files and import survey design files. SAASM capability integrated into COTS GPS in order to meet OSD Policy
- **Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)** are a family of IT standards (models, specifications) which define a DoD-wide set of semantics intended to maximize interoperability of geospatial information and services for installation, environment and civil works missions. *SDSFIE Online* is a web-centric interface that enables users to access documentation, participate in functionality, and utilize tools that support the goals of the SDSFIE family of standards
- **The National Inventory of Dams (NID)** is a congressionally authorized database documenting over 79,000 dams in the United States and its territories. It is maintained and published by the US Army Corps of Engineers. It contains information about a dam's location, size, purpose, type, last inspection and regulatory facts
- Inland Electronic Navigational Chart program supports efficient and safer navigation in the Inland waterways by utilizing modern software, mapping, Geographic Information System (GIS), and Global Positioning System (GPS) technologies to transform traditional paper river charting data into new digital charting products called Inland Electronic Navigational Charts (IENCs).



US Army Corps of Engineers
BUILDING STRONG.

Systems and Acquisition Support Directorate





US Army Corps of Engineers
BUILDING STRONG.



Contract Overview

FY17 Requirements

Project Title / Project Description	Division/ Directorate/ Branch	Approximate Total Value	NAICS	Estimated Award	Anticipated Sources Sought	Set-Aside Category	Anticipated Solicitation Date
Geospatial Research Integration and Support (GRIDS) III UR	SASD	\$200M	541712	4QFY17	3Q FY16	UNR	1QFY17
Geospatial Research Integration and Support (GRIDS) III R	SASD	\$50M	541712	4QFY18	4Q FY17	Small Business Set-Aside	2QFY18
IGI&S Installation Geospatial Information & Services	SASD	\$50M	541512	1QFY18	Posted May 2016	Small Business Set-Aside	2QFY17
AGC SETA	AGC	\$80M	541690	4QFY17	2QFY17	TBD by Market Research	2QFY17

GRIDS III UNRESTRICTED

- W5J9CQ-16-R-0008; NAICS Code: 541712; size standard 1,000 employees.
- Indefinite Delivery / Indefinite Quantity (IDIQ) Multiple Award Task Order (MATOC)
- CPFF / FFP task orders
- Maximum Value of \$200 Million
- POP: One (1) Base Year; Four (4) Option Years
- *GRIDS II Task Orders: ~ 65 Totaling \$160M to date*

GRIDS III UNRESTRICTED cont..

- Geospatial Research, Integration, Development and Support (GRIDS III)
- Original RFI: October 09, 2014
- Updated RFI: March 09, 2016
- DRAFT RFP: 18 July 2016
- Synopsis Posted: 12 Oct 2016
- Estimated RFP posting: ~12 Dec 2016
- RFP responses 30 Days after Posting: ~ Jan 11, 2016

GRIDS III UNRESTRICTED cont...

The GRIDS III contract is designed to provide services necessary to acquire special skills, systems engineering and technical services to perform research and development activities, maintenance, and operational support that relate to rapid development, limited fielding and geospatial technology services for the warfighter as defined in the following requirements

Type of work included in the Solicitation:

- Provide Geospatial Intelligence Systems RDT&E
- Integrate, execute and transition C4ISR concepts, processes and architectures.
- Formulate and execute JCTD, prototypes and QRCs relevant to Geospatial Technologies.
- Operational services CONUS and OCONUS
- Policy and procedure evaluation from Gov't and Non-Gov't organizations
- Analysis of Army's geospatial portfolio
- Conduct experiments/Demos and T&E on software intensive systems that display data on a geospatial foundation
- Army Geospatial Co-Producer Certification Program

GRIDS III UNRESTRICTED cont..

- Assess accuracy reliability and operational utility of remote sensing and C4ISR GEOINT collection systems.
- Develop and apply new technologies and processes related to Geospatial/GEOINT exploitation tools, FMV, ABI, SOM, AGI, WAMI and other trade crafts
- Perform VV&A
- Develop, integrate and operate ground segments/stations for ISR payload types
- Identify and research future requirements and transition technologies for POR and COCOMs
- Examine and evaluate technologies and tools for Gov't, Academia, and industry
- Acquire, fuse and disseminate multiple sources of information through multiple modes of analysis and data dissemination to be shared from unclassified through National system level.
- Prepare documentation; develop common geospatial applications services and widgets, training and integration logistics to support enterprise implementation.
- Develop and operate test suites of hardware and software capable of testing exchange of geospatial data. Conduct tests on the test suite.

GRIDS III RESTRICTED

- W5J9CQ-15-R-0004; NAICS Code 541712; size standard 1,000 employees
- Indefinite Delivery / Indefinite Quantity (IDIQ) Multiple Award Task Order (MATOC)
- CPFF / FFP task orders
- Maximum Value of \$48 Million
- POP: One (1) Base Year; Four (4) Option Years
- *GRIDS II SBSA Task Orders: Three awardees: 29 Task Orders Totaling \$45.1M*

GRIDS III RESTRICTED cont...

- Geospatial Research, Integration, Development and Support (GRIDS III) Small Business Set Aside (SBSA)
- Original RFI: October 09, 2014
- Updated RFI: TBD
- DRAFT RFP: TBD
- Synopsis Posted: TBD
- Estimated RFP posting: TBD

GRIDS III RESTRICTED cont...

The GRIDS III contract is designed to provide services necessary to acquire special skill sets, systems engineering, and technical services to accomplish its mission which is to coordinate, integrate and synchronize geospatial information requirements and standards across the Army; develop and field geospatial-enterprise enabled systems and capabilities to the Army and the DoD; and to provide direct geospatial support and product to Warfighters.

Type of work included in the Solicitation:

- Develop, deliver and document logical and physical data models
- Develop, manage, integrate and retranslate geospatial databases
- Establish Army/Joint Information Systems Architectures and Geospatial Enterprise Architectures using strategic and tactical communications for multiple services.
- Conduct modeling and simulation analyses and development, including data model generation
- Acquire, fuse and disseminate various sources of information at various echelons, to be shared across multiple stakeholders from unclassified through National System level.
- Perform 'speculative/hypothetical scenarios' with data models, TTPs and CONOPS

GRIDS III RESTRICTED cont...

- Document development/utilization of geodetic sensors, functions and applications in the Civil and Defense realms
- Conduct Civil Engineering applications to include but not limited to surveying, environmental engineering, water resources engineering, geotechnical engineering and construction engineering.
- Document current and future enterprise networks, data flows, control points, technology solutions etc. in DoDAF format.
- Build Raster and vector geospatial data; collect models, terrain datasets and process, exploit and disseminate geospatial information; (geospatial database development, management and integration).
- Generate terrain databases and 3D Models to support DoD virtual and constructive simulations
- Gather, analyze, and exploit human geographic concepts, principles and information to support Civil-Military Operations by using Geospatial science & technology.
- Develop and/or enhance mission planning algorithms, tools and methodologies that consider geospatial information to assist small units in mission planning.



Installation Geospatial Information & Services



- Geospatial support and products for the DoD Installations, Energy & Environment community.
 - Geospatial data collection, maintenance, & update
 - Data modeling
 - Geospatially enabling Enterprise systems and engineering
 - Policy and strategic communications



US Army Corps of Engineers
BUILDING STRONG.

Installation Geospatial Information & Services



- Multiple Award contract for services
- 5 year contract
- TDB for RFP release

What is a successful offer?

- Understanding of the requirements
- Reasonable and realistic milestones
- Mitigates risk

Past IGI&S requirements

- Office of the Assistant Chief of Staff for Installation Management
- Installation Management Command
 - US Army Environmental Command
- US Army Corps of Engineers
- US Army Reserves
- Commander Navy Installation Command
- Navy Facilities Engineering Command
- US Marine Corps Installation Command
- Army National Military Cemeteries
- Arlington National Cemetery
- Army Installations

AGC SETA

- Small Business Set-Aside
- MATOC
- 3rd Quarter FY17 award
- Total contract value will be \$80M
- Base year plus 4 option years

AGC SETA requirements

- System Engineering and Technical Assistance Support (SETA)
- General engineering
- technical operations and services in support of the U.S. Army Geospatial Center (USAGC) and its customers, both in the continental United States (CONUS) and at other than continental United States (OCONUS) locations that may occur during wartime and in hazardous locations

AGC SETA requirements

- Planning, collection and analysis of data, proof of concept efforts, experiments, exercises, demonstrations (to include logistics demonstrations), configuration management and any other areas of consideration for efforts which currently include:
 - Joint and Coalition Targeting and Fires Coordination
 - Humanitarian Assistance and Disaster Relief (HADR)
 - There is potential to expand support into areas of:
 - Cyber Technology and Security

AGC SETA requirements

- Information technology support services for providing information and SME services to assist in the accreditation of C5ISR systems for the USAGC and its customers.
- Limited Fabrication and Integration of hardware and software.
- Operation, maintenance and training on Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) systems and applications.
- Implementing new Tactics, Techniques and Procedures (TTPs), to include in Intelligence Community areas.

AGC SETA requirements

- Incorporating various technologies for various Military Services training and doctrine organizations as it relates to geospatial weapons and C5ISR systems consistent with The Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities (DOTMLPF).
- Providing technical and business process expertise and analysis for support of acquisition program documentation.
- Process and analyze financial and manpower data.
- Liaison to the Services and COCOMS.
- Rapid Prototyping
- Modeling and Simulation efforts.

AGC SETA

- The RFI will be released soon.
- Please respond.



US Army Corps of Engineers
BUILDING STRONG.



Questions?